

WHAT IS CLAIMED IS:

1. A screw refrigerating apparatus comprising:  
a refrigerant circulating passage, said refrigerant circulating passage including:

a screw compressor;

a rotor room within said screw compressor;

a condenser;

an expansion valve; and

an evaporator,

throttle means; and

a bypass flow passage branching at a part of said refrigerant circulating passage between said condenser and said expansion valve, routing through said throttle means, and communicating with said rotor room.

2. The screw refrigerating apparatus according to claim 1, wherein refrigerant circulating in said refrigerant circulating flow passage contains a quantity of lubricant as much as restraining a decrease of heat transfer efficiency due to said lubricant in said condenser and in said evaporator to a practically negligible degree.

3. The screw refrigerating apparatus according to claim 2, wherein said bypass flow passage branches from a top part of said refrigerant circulating flow passage when the specific gravity of said lubricant is lower

than the specific gravity of said refrigerant, and said bypass flow passage branches from a bottom part of said refrigerant circulating flow passage when the specific gravity of said lubricant is higher than the specific gravity of said refrigerant.

4. The screw refrigerating apparatus according to claim 1, further comprising:

a discharged refrigerant temperature detector provided for detecting the refrigerant temperature between said screw compressor and said condenser, and for outputting a temperature signal indicating the detected temperature; and

a variable throttle valve employed as said throttle means interposed on said bypass flow passage,

wherein said variable throttle valve increases its opening as said detected temperature becomes high.

5. The screw refrigerating apparatus according to claim 1, further comprising:

a driving unit of said screw compressor, said driving unit comprising an inverter and a variable speed motor controlled by said inverter;

a temperature detector for detecting the refrigerant temperature inside said evaporator, and for outputting a temperature signal indicating the detected temperature; and

a controller for receiving the temperature signal, and for outputting a control signal to said inverter to change the rotation speed of said variable

speed motor so that said detected temperature is equal to a set temperature.

6. The screw refrigerating apparatus according to claim 1, further comprising:

a driving unit of said screw compressor, said driving unit comprising an inverter and a variable speed motor controlled by said inverter;

a pressure detector for detecting the refrigerant pressure between said evaporator and said screw compressor, and for outputting a pressure signal indicating the detected pressure and;

a controller for receiving the pressure signal, and for outputting a control signal to said inverter to change the rotation speed of said variable speed motor so that said detected pressure is equal to a set pressure.

7. A screw refrigerating apparatus comprising:

a refrigerant circulating passage, said refrigerant circulating passage including:

a screw compressor;

a rotor room within said screw compressor;

a condenser;

an expansion valve; and an evaporator,

a fluid lubricated bearing inside said screw compressor;

first throttle means;

a bypass flow passage branching at a part of said refrigerant circulating passage between said condenser and said expansion valve, routing through said first throttle means, and communicating with

said rotor room;

second throttle means; and

a bearing-fluid-filling flow passage branching at a part of said refrigerant circulating passage between said condenser and said expansion valve, routing through said second throttle means, and communicating with said fluid lubricated bearing.